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SEARCH REQUEST FORM 22122

Examiner # (Mandatory): _____ Requester's Full Name: Irene Marx

Art Unit 1651 Location (Bldg/Room#): 10E05 Phone (circle 305 306 308) 2912

Serial Number: 09/408142 Results Format Preferred (circle): PAPER DISK E-MAIL

Title of Invention production of L-aspartic acid

Inventors (please provide full names): See attached

Earliest Priority Date: 9/30/98

Keywords (include any known synonyms registry numbers, explanation of initialisms):

Ammonium fumarate, aspartase, aspartic, aspartate, crystallize, heat, cool

Search Topic:

Please write detailed statement of the search topic, and the concept of the invention. Describe as specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples of relevant citations, authors, etc., if known. You may include a copy of the abstract and the broadcast or most relevant claim(s).

09/408142

Point of Contact:
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Technical Info. Specialist
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STAFF USE ONLY

Searcher: HANLEY
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Searcher Location: _____
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Date Completed: 8/7
~~Clerical~~ Prep Time: 20
Terminal Time: 45
Number of Databases: 1

Type of Search

_____ N.A. Sequence
_____ A.A. Sequence
2 Structure (#)
_____ Bibliographic
1 Litigation
_____ Fulltext
_____ Procurement
_____ Other

Vendors (include cost where applicable)

STN
_____ Questel/Orbit
_____ Lexis/Nexis
_____ WWW/Internet
_____ In-house sequence systems (list)
_____ Dialog
_____ Dr. Link
_____ Westlaw
_____ Other (specify)

PTO-1590 (2-99)

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=> d his

     (FILE 'HOME' ENTERED AT 17:28:50 ON 07 AUG 2000)

     FILE 'HCAPLUS' ENTERED AT 17:28:55 ON 07 AUG 2000
L1           13 S MUKOUYAMA M?/AU
L2         1176 S YASUDA S?/AU
L3          138 S KOMATSUZAKI S?/AU
L4            2 S L1 AND L2 AND L3
L5            1 S L4 AND FUMARATE?
                SELECT RN L5 1

     FILE 'REGISTRY' ENTERED AT 17:36:42 ON 07 AUG 2000
L6            8 S E1-8

     FILE 'HCAPLUS' ENTERED AT 17:36:51 ON 07 AUG 2000
L7            1 S L5 AND L6

     FILE 'REGISTRY' ENTERED AT 17:41:47 ON 07 AUG 2000
L8            1 S  14548-85-7
L9            1 S  9027-30-9
L10           1 S  56-84-8
L11           1 S  110-17-8
L12           1 S AMMONIA/CN
L13           1 S 110-17-8
L14       27012 S  110-17-8/CRN
L15        1095 S 7664-41-7/CRN
L16           1 S L14 AND L15

     FILE 'HCAPLUS' ENTERED AT 17:54:07 ON 07 AUG 2000
L17        7356 S L16 OR L11 OR L8
L18       26303 S L10
L19          31 S L17(L)L18
L20         438 S L9
L21          10 S L19 AND L20
L22           5 S L21 AND ?AMMON?
L23           5 S L22 NOT L5
L24           5 S L21 NOT L23
L25           5 S L24 NOT L5
L26          31 S L19 NOT L5
L27         625 S L17 AND L18
L28         159 S L27 AND (AMMON? OR L12)
L29          46 S L28 AND L9
L30           9 S L29 AND ?CRYSTAL?
L31           8 S L30 NOT L5
L32           8 S L31 NOT (L23 OR L25)
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inventor search

1 cite

fumarate ammonium

aspartase

aspartic acid

fumaric acid

fumarate & ammonia in a mixture

5 cites

5 cites

8 cites

=> d bib abs hitstr l7

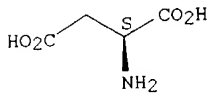
L7 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2000 ACS
AN 2000:259842 HCAPLUS
DN 132:278243
TI Enzymic manufacture of crystalline L-aspartic acid from ammonium **fumarate**
IN **Mukouyama, Masaharu; Yasuda, Shinzo; Komatsuzaki, Satomi**
PA Nippon Shokubai Co., Ltd., Japan
SO Eur. Pat. Appl., 29 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 994189	A1	20000419	EP 1999-307757	19990930
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000166590	A2	20000620	JP 1999-277584	19990929
	JP 2000166591	A2	20000620	JP 1999-277585	19990929
PRAI	JP 1998-278571		19980930		
	JP 1998-278579		19980930		

AB This invention relates to a method for producing L-aspartic acid comprising treating an ammonium **fumarate** soln. with aspartase to generate an ammonium L-aspartate soln.; adding fumaric acid to the soln.; and then crystg. L-aspartic acid from the soln. Fumaric acid is added to the ammonium L-aspartate soln. after the soln. has been heated to 50 to 130.degree.C in an amt. 0.4 to 0.8 times the total amt. of **fumarate** and the L-aspartate contained therein in terms of mole, and the resultant mixt. is once turned into a homogeneous soln. by applying thereto a shearing force, and then L-aspartic acid is deposited therefrom, or wherein the soln. is cooled at a rate of 0.1-5.degree.C/min from the temp. at which fumaric acid is added thereto to the temp. at which crystd. L-aspartic acid is sepd. therefrom, to thereby deposit L-aspartic acid. The aspartase may be manufd. by expression of the cloned gene and cloning and expression of the Escherichia coli K12 aspartase gene is described. Conversion rates of .gtoreq.99.2% with an L-aspartic acid purity of 99.7% were obtained. Crystals were needle-like.

IT **56-84-8P**, L-Aspartic acid, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enzymic manuf. of cryst. L-aspartic acid from ammonium **fumarate**)
RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).

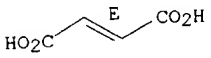


IT **9027-30-9DP**, Aspartase, immobilized
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(enzymic manuf. of cryst. L-aspartic acid from ammonium **fumarate**)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **14548-85-7**, Ammonium **fumarate**
RL: RCT (Reactant)
(enzymic manuf. of cryst. L-aspartic acid from ammonium **fumarate**)

RN 14548-85-7 HCAPLUS
CN 2-Butenedioic acid (2E)-, diammonium salt (9CI) (CA INDEX NAME)

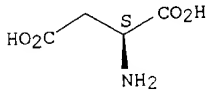
Double bond geometry as shown.



●2 NH_3

IT **32259-99-7P**, Ammonium aspartate
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)
(enzymic prepn. of; enzymic manuf. of cryst. L-aspartic acid from ammonium **fumarate**)
RN 32259-99-7 HCAPLUS
CN L-Aspartic acid, ammonium salt (9CI) (CA INDEX NAME)

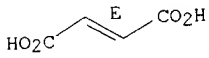
Absolute stereochemistry. Rotation (+).



●x NH_3

IT **110-17-8**, Fumaric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(in pptn. of cryst. aspartic acid; enzymic manuf. of cryst. L-aspartic acid from ammonium **fumarate**)
RN 110-17-8 HCAPLUS
CN 2-Butenedioic acid (2E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



IT **247573-49-5**, PN: JP11290091 SEQID: 1 unclaimed DNA
263742-86-5 263742-87-6
RL: PRP (Properties)
(unclaimed nucleotide sequence; enzymic manuf. of cryst. L-aspartic acid from ammonium **fumarate**)
RN 247573-49-5 HCAPLUS
CN PN: JP11290091 SEQID: 1 unclaimed DNA (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 263742-86-5 HCAPLUS
CN 2: PN: EP994189 SEQID: 2 unclaimed DNA (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 263742-87-6 HCAPLUS
CN 3: PN: EP994189 SEQID: 3 unclaimed DNA (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 9
RE
(1) Ajinomoto; JP 48056618 A 1977
(2) Mitsubishi Chem Corp; JP 09322790 A 1997
(3) Nippon Catalytic Chem Ind; EP 0952225 A 1999
(4) Nippon Shokubai Co Ltd; JP 07308195 A 1995
(5) Nippon Shokubai Co Ltd; JP 07313178 A 1995

SEARCHED BY SUSAN HANLEY 305-4053

ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d bib abs hitstr 123 1

L23 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1987:118060 HCAPLUS
DN 106:118060
TI Continuous production of L-aspartic acid. Improvement of productivity by both development of immobilization method and construction of new Escherichia coli strain
AU Chibata, Ichiro; Tosa, Tetsuya; Sato, Tadashi
CS Res. Dev. Headquarters, Tanabe Seiyaku Co. Ltd., Osaka, Japan
SO Appl. Biochem. Biotechnol. (1986), 13(3), 231-40
CODEN: ABIBDL; ISSN: 0273-2289
DT Journal
LA English
AB For the continuous prodn. of L-aspartic acid [**56-84-8**] from fumaric acid [**110-17-8**] and **ammonia** by the action of aspartase [**9027-30-9**], the enzyme extd. from E. coli or E. coli cells having high aspartase activity were immobilized by various methods. In 1973 the industrial prodn. of L-aspartic acid was performed using E. coli cells immobilized with polyacrylamide [9003-05-8] gel. For the improvement of this process, a novel technique was developed using .kappa.-carrageenan [11114-20-8] as the immobilizing matrix for E. coli cells. Further, EAPc-7 strain, having higher aspartase activity, was contracted from the parent E. coli by continuous cultivation with a definite medium. The aspartase activity was .apprx.7-fold higher than that of the parent cells. In 1982 conventional method was changed to the improved method, using EAPc-7 strain immobilized with .kappa.-carrageenan.
IT **9027-30-9**, Aspartase
RL: BIOL (Biological study)
(of immobilized Escherichia coli, aspartic acid prodn. in relation to)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr l23 2

L23 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1985:594954 HCAPLUS
DN 103:194954
TI L-Aspartic acid
PA Mitsubishi Petrochemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 60126092	A2	19850705	JP 1983-234594	19831213
	JP 04080678	B4	19921221		

AB L-Aspartic acid (I) [**56-84-8**] was prepd. by reaction of fumaric acid [**110-17-8**] or its **ammonium** salt [32378-54-4] in the presence of aspartase [**9027-30-9**]-contg. cells or their fixed substances pretreated with I and **ammonium** ion at 40-60.degree. under alk. conditions. This method suppressed fumarase [9032-88-6] activity while maintaining aspartase activity. Thus, precultured Brevibacterium flavum MJ233-AB-41 (FERM 3812) was cultured on medium (pH 7.6) of (NH4)2SO4 23, K2HPO4 0.5, KH2PO4 0.5, MgSO4.7H2O 0.5, yeast ext. 3, casamino acid 3 g/L, and traces of biotin, thiamin, Fe2+, and Mn2+ for 5 h at 33.degree. with addn. of 1-1.5 vol. % EtOH. The cells were collected and pretreated with 750 mM aspartic acid, 10 mM MgSO4.7H2O, 0.1 vol. % Tween 20, and 2M NH3 for 5 h at 46.degree.. The cells were then collected and stirred with a mixt. of 830 mM fumaric acid, 10 mM MgSO4.7H2O, 0.1 vol. % Tween 20, and 4M NH3 for 10 h at 46.degree. to give 810 mM I.

IT **9027-30-9**
RL: BIOL (Biological study)
(in aspartate manuf. from fumarate with Brevibacterium flavum)

RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr l23 3

L23 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1983:70352 HCAPLUS
DN 98:70352
TI Aspartase
IN Sternberg, D. C.; Moser, L. J.
PA Genex Corp., USA
SO Belg., 21 pp.
CODEN: BEXXAL
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	BE 893838	A1	19821103	BE 1982-208588	19820714
	ZA 8204805	A	19830427	ZA 1982-4805	19820706
	DK 8203075	A	19830416	DK 1982-3075	19820708
	AU 8285924	A1	19830421	AU 1982-85924	19820712
	SE 8204306	A	19830416	SE 1982-4306	19820713
	NL 8202854	A	19830502	NL 1982-2854	19820714
	BR 8204099	A	19830705	BR 1982-4099	19820714
	JP 58067184	A2	19830421	JP 1982-124277	19820715
	FR 2514782	A1	19830422	FR 1982-12369	19820715
	GB 2108128	A1	19830511	GB 1982-20598	19820715
	DE 3226532	A1	19830901	DE 1982-3226532	19820715
	ES 514018	A1	19831016	ES 1982-514018	19820715
	FI 8203502	A	19830416	FI 1982-3502	19821014
	DD 207219	A5	19840222	DD 1982-243983	19821014
	HU 31290	O	19840428	HU 1982-3288	19821015

PRAI US 1981-311618 19811015
AB aspartase [**9027-30-9**] Is produced by fermn. with Escherichia coli ATCC 31976 using hypertonic **ammonium** fumarate [32378-54-4] or **ammonium** aspartate [32259-99-7] to stabilize the enzyme. Thus, E. coli was inoculated into a pH 7.2 medium contg. yeast ext. 8, fumaric acid 3, K2HPO4 0.2, and Na2CO3 0.05%, plus MgSO4 and CaCl2, and incubated at 37.degree. for 12-14 h. The cells were washed and suspended in 1.8M **ammonium** fumarate (pH 8.5) in 1/5 the fermn. vol. After 24 h, 80% of the aspartase activity was cell-free. The enzyme was immobilized to produce aspartate [**56-84-8**] from fumarate [**110-17-8**] in 83-6% yield.
IT **9027-30-9P**
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(manuf. of, with Escherichia coli)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr 123 4

L23 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1981:101278 HCAPLUS
DN 94:101278
TI Production of L-aspartic acid from fumaric acid by a fumaric acid-assimilating obligate thermophile, Bacillus stearothermophilus KP 1041
AU Suzuki, Yuzuru; Yasui, Tadashi; Mino, Yuji; Abe, Shigeo
CS Dep. Agric. Chem., Kyoto Prefect. Univ., Kyoto, 606, Japan
SO Eur. J. Appl. Microbiol. Biotechnol. (1980), 11(1), 23-7
CODEN: EJABDD; ISSN: 0171-1741
DT Journal
LA English
AB A fumaric acid [**110-17-8**]-assimilating obligate thermophile with high aspartase [**9027-30-9**] activity was isolated from soil. The isolate (KP 1041), which grew at 45-68.degree., was a strain of B. stearothermophilus. Cell suspensions produced L-aspartate [**56-84-8**] from fumarate and NH4+, with the most rapid initial rate at 65.degree. and pH 9.5. The Michaelis const. for fumarate was 0.2 M. Aspartase was relatively stable for 18 h at .ltoreq.50.degree. at pH 6.7-8.3 in the presence of **ammonium** fumarate; this substance protected the enzyme from heat inactivation. The best yield in L-aspartic acid prodn. was achieved at 6 h incubation at 53.degree. and pH 8.5, using 0.88M fumarate, 3.1M NH4+, and the cells at 53 mg dry wt. per mL. In this case, 85% of the fumarate added was converted to aspartic acid.
IT **9027-30-9**
RL: BIOL (Biological study)
(of Bacillus stearothermophilus)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr l23 5

L23 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1972:457144 HCAPLUS
DN 77:57144
TI Influence of fumaric acid upon the levels of **ammoniacal** nitrogen in bovine rumen liquor (in vitro)
AU Zherebtsov, P. I.; Solntsev, A. I.; Smelova, S. V.
CS USSR
SO Izv. Timiryazev. Sel'skokhoz. Akad. (1972), (2), 226-8
CODEN: ITSAA7
DT Journal
LA Russian
AB Fumaric acid [**110-17-8**], added to bovine rumen liquor, reacted with NH3 to form aspartate [**56-84-8**]; this reaction was catalyzed by a lyase [**9027-30-9**]. When added to the diet of 9-month-old bulls, fumarate reacted similarly with rumen liquor NH3.
IT **9027-30-9**
RL: BIOL (Biological study)
(of rumen, fumaric acid effect on)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr 125 1

L25 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1986:405058 HCAPLUS
DN 105:5058
TI Production of L-aspartic acid from fumaric acid by bioconversion
AU Michelet, J.; Deschamps, A.; Lebeault, J. M.
CS Div. Procedes Biotechnol., Univ. Technol. Compiegne, Compiegne, 60206, Fr.
SO Eur. Congr. Biotechnol., 3rd (1984), Volume 2, 133-8 Publisher: Verlag Chemie, Weinheim, Fed. Rep. Ger.
CODEN: 55BBA6
DT Conference
LA English
AB L-Aspartic acid [**56-84-8**] was produced from fumaric acid [**110-17-8**] by aspartase [**9027-30-9**]-contg. immobilized Pseudomonas putida. Of different support materials tested, only carrageenan [9000-07-1] increased the stability of aspartase activity of the cells. In a batchwise fermn. process, the concn. of aspartic acid was 200 g/L which could be extd. providing yields of 80-100%.
IT **9027-30-9**
RL: BIOL (Biological study)
(immobilized Pseudomonas putida contg., aspartic acid manuf. with)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr l25 2

L25 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1986:4594 HCAPLUS
DN 104:4594
TI Production of L-aspartic acid from Brevibacterium by the cell re-using process
AU Terasawa, Masato; Yukawa, Hideaki; Takayama, Yoshihiro
CS Cent. Res. Lab., Mitsubishi Petrochem. Co., Ltd., Inashiki, 300-03, Japan
SO Process Biochem. (1985), 20(4), 124-8
CODEN: PRBCAP; ISSN: 0032-9592
DT Journal
LA English
AB The fumarase [9032-88-6] of B. flavum was inactivated while the aspartase [**9027-30-9**] was protected by holding the intact cells at 45.degree. for 5 h in a mixt. contg. 2M NH3, 750 mM L-aspartic acid [**56-84-8**], 7.5 mM CaCl2, and 0.08% Tween 20. The treated cells produced aspartate quant. from fumaric acid [**110-17-8**], with no formation of malate. A yield of .apprx.1250 mM aspartate was achieved in 20 h by a 4.5% suspension of B. flavum cells in a medium contg. 4M NH4OH and 7.5 mM CaO2. Similar yields were obtained in 7 repeated uses of the cells.
IT **9027-30-9**
RL: BIOL (Biological study)
(Brevibacterium flavum contg., aspartic acid prodn. with)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr l25 3

L25 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1985:147483 HCAPLUS
DN 102:147483
TI Industrial use of ethanol utilizing microorganisms. Part I. Production of L-aspartic acid by reusing cells
AU Yukawa, Hideaki; Yamada, Seiichiro; Nara, Terukazu; Terasawa, Masato; Takayama, Yoshihiro
CS Cent. Res. Lab., Mitsubishi Petrochem. Co., Inashiki, 300-03, Japan
SO Nippon Nogei Kagaku Kaishi (1985), 59(1), 31-7
CODEN: NNKKAA
DT Journal
LA Japanese
AB Strong aspartase [**9027-30-9**] activity was found in a mutant of Brevibacterium resistant to .alpha.-amino-n-butyric acid. The optimal pH and temp. for the aspartase activity were 9.3 and 54.degree., resp. The activity was markedly activated by Ca2+. Fumaric acid [**110-17-8**] as a substrate protected the enzyme against thermal inactivation. L-Aspartic acid [**56-84-8**] was formed in a yield of 77% from a 10% fumaric acid soln. contg. 7.5 mM CaCl2 (adjusted to pH 9.3 with NH4OH) at 45.degree. by 3% wet cells. The cells were reused for the prodn. of L-aspartic acid.
IT **9027-30-9**
RL: BIOL (Biological study)
(of Brevibacterium, aspartic acid manuf. in relation to)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr 125 4

L25 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1985:77274 HCAPLUS
DN 102:77274
TI L-Aspartic acid
IN Sherwin, Martin Barry; Blouin, John Joseph
PA Grace, W. R., and Co., USA
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 127940	A2	19841212	EP 1984-302831	19840426
	EP 127940	A3	19860205		
	R: CH, DE, FR, GB, IT, LI, NL				
	US 4560653	A	19851224	US 1983-501421	19830606
PRAI	US 1983-501421		19830606		

AB L-Aspartic acid [**56-84-8**] is produced from fumarate [**110-17-8**] by treatment with aspartase [**9027-30-9**] or aspartase-producing microorganism. Maleic acid [110-16-7] is added to ppt. L-aspartic acid. Maleic acid is also isomerized in the supernatant liq. to fumaric acid which is recycled into contact with the enzyme or the microorganism. Examples of aspartase-producing cultures are: Pseudomonas fluorescens, Serratia marcescens, Bacterium succinium, Bacillus subtilis, Aerobacter aerogenes, Micrococcus, and Escherichia coli. Aspartase and aspartase-producing cells can be used as free or immobilized in polyurethane foam. Thus, a substrate soln. contg. 348 g fumaric acid and 350 mg $MgCl_2$ in 25% NH_4OH (pH 8.5, final vol. 2000 mL) was passed through a column packed with immobilized E. coli. The pH of the eluate was reduced to 3.5 by addn. of 350 g maleic acid. The mixt. was heated to .apprx.60.degree. and then cooled to ppt. L-aspartic acid which was washed with deionized water and dried. L-Aspartic acid was 98.8% pure. The supernatant liq. from the the crystn. and the wash water were combined and used for the isomerization of maleic acid.

IT **9027-30-9P**
RL: PREP (Preparation)
(aspartic acid manuf. from fumarate by)

RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr l25 5

L25 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2000 ACS
AN 1980:406120 HCAPLUS
DN 93:6120
TI Kinetics of production of L-aspartic acid by aspartase of immobilized Escherichia coli cells
AU Takamatsu, Satoru; Yamashita, Kiyokazu; Sumi, Akihiko
CS Res. Lab. Appl. Biochem., Tanabe Seiyaku Co., Ltd., Osaka, 532, Japan
SO J. Ferment. Technol. (1980), 58(2), 129-33
CODEN: JFTED8; ISSN: 0385-6380
DT Journal
LA English
AB For the control of aspartase [**9027-30-9**] prodn. and for the design of a reactor using immobilized E. coli cells, a simple and useful equation was derived. In a continuously stirred tank reactor the rate equation was shown to sufficiently satisfy the exptl. results obtained with several input concns. of fumaric acid. Kinetic consts. of the rate equation obtained, however, were altered by changing of the input concn. of fumaric acid. [**110-17-8**]. This phenomenon may result from the change of diffusibility of fumaric acid and L-aspartic acid [**56-84-8**] in gel matrices depending on the structural change of polyacrylamide gel caused by the variation of the input concn. of fumaric acid. Then the kinetic consts. were represented as the function of the input concn. of fumaric acid.
IT **9027-30-9**
RL: BIOL (Biological study)
(immobilized, in Escherichia coli, kinetics of)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr l32 1

L32 ANSWER 1 OF 8 HCAPLUS COPYRIGHT 2000 ACS
AN 1999:498235 HCAPLUS
DN 131:130285
TI Method for **crystallization** of L-aspartic acid
IN Mori, Yoshiaki; Kato, Naoki; Eiraku, Junko
PA Mitsubishi Chemical Industries Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

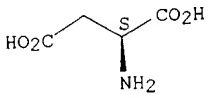
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11217359	A2	19990810	JP 1998-332307	19981124
PRAI	JP 1997-322845		19971125		

AB In **crystn.** of L-aspartic acid from an aq. soln. of L-aspartic acid salt, in particular **ammonium** L-aspartate, in the presence of an acid-pptg. agent such as maleic acid or fumaric acid, the supersatn. index (.DELTA.pH) is set at .ltoreq.0.4 during **crystn.** of L-aspartic acid. This method efficiently **crystallizes** L-aspartic acid of high purity with good reproducibility. Thus, an aq. soln. of **ammonium** L-aspartate contg. L-aspartic acid 200, fumaric acid 0.5, and NH4+ 35.2 g/L (200 mL, pH 9), which was prepd. by fermn. of Brevibacterium flavum possessing aspartase activity with fumaric acid and NH3 in aq. medium, was warmed to 60.degree. with stirring, followed by gradually adding 10.5 g fumaric acid powder, upon which the pH of the aq. soln. lowered from 8.48 to 4.65. The aq. soln. was seeded with L-aspartic acid (food additive grade). The pH gradually rose as L-aspartic acid gradually **crystd.**, and remained stable at 4.75 (.DELTA.pH = 0.10) after .apprx.30 min. After adding another portion of fumaric acid (20.9 g in total, 0.6 equiv of L-aspartic acid), the pH remained stable at 4.60 after R30 min. The resulting slurry was cooled to 30.degree. over 1 h, kept at 30.degree. for 30 min., and was subjected to the solid-liq. sepn., followed by rinsing the solid with distd. water and drying at .apprx.60.degree. to give 24.0 g L-aspartic acid (60% recovery ratio).

IT **56-84-8P**, L-Aspartic acid, preparation
RL: BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(**crystn.** of L-aspartic acid from aq. soln. of its salt using acid-pptg. agent)

RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

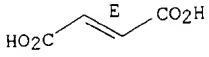
Absolute stereochemistry. Rotation (+).



IT **110-17-8**, Fumaric acid, reactions
RL: NUU (Nonbiological use, unclassified); RCT (Reactant); USES (Uses)
(**crystn.** of L-aspartic acid from aq. soln. of its salt using acid-pptg. agent)

RN 110-17-8 HCAPLUS
CN 2-Butenedioic acid (2E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



IT **9027-30-9**, Aspartase
RL: CAT (Catalyst use); USES (Uses)

(of Brevibacterium flavum; **crystn.** of L-aspartic acid from aq. soln. of its salt using acid-pptg. agent)

RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr 132 2

L32 ANSWER 2 OF 8 HCAPLUS COPYRIGHT 2000 ACS
AN 1998:493699 HCAPLUS
DN 129:121713
TI A process for the production of **crystalline** aspartic acid
IN Eyal, Aharon Meir; Vitner, Asher; Cami, Pierre; Jansen, Robert; Jarry, Bruno; Lecomte, Didier; Scott, Jean; Chattaway, Thomas; Van Lancker, Frank
PA Amylum Belgium N.V., Belg.; A.E. Staley Manufacturing Co.
SO PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

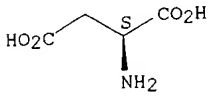
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9830712	A1	19980716	WO 1998-US290	19980108
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9858177	A1	19980803	AU 1998-58177	19980108
EP 966539	A1	19991229	EP 1998-901724	19980108
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
US 6071728	A	20000606	US 1999-331899	19991018
PRAI IL 1997-119986	19970109			
WO 1998-US290	19980108			

AB The invention provides process for the prodn. of aspartic acid comprising the steps of: (a) forming an aq. soln. contg. diammonium fumarate, using per mol of diammonium fumarate .apprx.2 mol of an NH3 source, a part of which is recycled from a step of the present process; (b) adjusting the compn. of an aq. soln. contg. diammonium fumarate obtained through a step of the present process to form a soln. having a concn. of .apprx.0.5M to .apprx.2M **ammonium** fumarate and having a pH of 7-9; (c) enzymically converting diammonium fumarate in the adjusted aq. soln. to monoammonium aspartate; (d) acidulating a soln. contg. the monoammonium aspartate by contacting with a cation exchanger which is at least partially in its acid form, at an elevated temp. of .gtoreq.50.degree., whereby NH4+ is transferred from the soln. to the cation exchanger and protons are transferred from the cation exchanger to the soln. thereby forming aspartic acid therein; (e) sepg. the aspartic acid-contg. aq. soln. from the NH4+-carrying cation exchanger; (f) sepg. the aspartic acid from the aq. soln. formed in step (e) by methods known per se; (g) regenerating the NH4+-carrying cation exchanger back to a cation exchanger which is at least partially in its acid form in a method that forms an NH3 source; (h) sepg. and reusing the converted cation exchanger in step (d); and (i) sepg. and reusing the NH3 source in step (a).

IT **56-84-8P**, Aspartic acid, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(process for the prodn. of **cryst**. aspartic acid)

RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

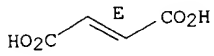
Absolute stereochemistry. Rotation (+).



IT **14548-85-7P**, Fumaric acid, diammonium salt

RL: BPN (Biosynthetic preparation); BPR (Biological process); RCT (Reactant); BIOL (Biological study); PREP (Preparation); PROC (Process)
(process for the prodn. of **cryst.** aspartic acid)
RN 14548-85-7 HCAPLUS
CN 2-Butenedioic acid (2E)-, diammonium salt (9CI) (CA INDEX NAME)

Double bond geometry as shown.



●2 NH_3

IT **7664-41-7, Ammonia,** biological studies
RL: BPR (Biological process); RCT (Reactant); BIOL (Biological study); PROC (Process)
(process for the prodn. of **cryst.** aspartic acid)
RN 7664-41-7 HCAPLUS
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IT **9027-30-9,** Aspartase
RL: CAT (Catalyst use); USES (Uses)
(process for the prodn. of **cryst.** aspartic acid)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr 132 3

L32 ANSWER 3 OF 8 HCAPLUS COPYRIGHT 2000 ACS
AN 1998:197740 HCAPLUS
DN 128:294011
TI Manufacture of L-aspartic acid from butane and **ammonia** without separation of the intermediates
IN Watanabe, Naoyuki; Kato, Naoki; Mori, Yoshiaki
PA Mitsubishi Chemical Industries Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10080292	A2	19980331	JP 1996-237677	19960909

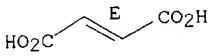
PI JP 10080292 A2 19980331 JP 1996-237677 19960909

AB L-Asp is manufd. by (A) gas-phase oxidn. of butane by O, (B) treatment of the resulting maleic anhydride with H2O, (C) treatment of the resulting maleic acid with **ammonium** maleate, NH3, and (microorganisms producing) isomerase, (D) treatment of (portion of) the resulting **ammonium** fumarate with NH3 in the presence of (microorganisms producing) aspartase in aq. media, and (E) acidifying the reaction mixts. contg. L-Asp **ammonium** with maleic acid obtained in the process B. L-Asp **crystals** are recovered and the mother liq. contg. **ammonium** maleate is returned to the process C. The processes A through D can be performed by one-step or multistep operations.

IT **14548-85-7P, Ammonium** fumarate
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BPR (Biological process); RCT (Reactant); BIOL (Biological study); PREP (Preparation); PROC (Process)
(manuf. of L-aspartic acid from butane and **ammonia** without sepn. of the intermediates)

RN 14548-85-7 HCAPLUS
CN 2-Butenedioic acid (2E)-, diammonium salt (9CI) (CA INDEX NAME)

Double bond geometry as shown.

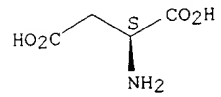


●2 NH3

IT **56-84-8P**, L-Aspartic acid, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); IMF (Industrial manufacture); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)
(manuf. of L-aspartic acid from butane and **ammonia** without sepn. of the intermediates)

RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



IT **7664-41-7, Ammonia**, biological studies
RL: BPR (Biological process); RCT (Reactant); BIOL (Biological study); PROC (Process)
(manuf. of L-aspartic acid from butane and **ammonia** without

sepn. of the intermediates)
RN 7664-41-7 HCAPLUS
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IT **9027-30-9,** Aspartase
RL: CAT (Catalyst use); USES (Uses)
(manuf. of L-aspartic acid from butane and **ammonia** without sepn. of the intermediates)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr l32 4

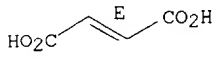
L32 ANSWER 4 OF 8 HCAPLUS COPYRIGHT 2000 ACS
AN 1998:124169 HCAPLUS
DN 128:204117
TI Manufacture of L-aspartic acid from butane and **ammonia** without purification of the intermediates
IN Watanabe, Naoyuki; Kato, Naoki; Mori, Yoshiaki
PA Mitsubishi Chemical Industries Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10052293	A2	19980224	JP 1996-211376	19960809

AB L-Asp is manufd. by (A) gas-phase oxidn. of butane in the presence of O, (B) treatment of the resulting maleic anhydride with H2O, (C) isomerization of the resulting maleic acid, (D) treatment of the resulting fumaric acid with **ammonium** fumarate and NH3 in the presence of (microorganisms producing) aspartase in aq. media, and (E) acidifying the reaction mixts. with fumaric acid obtained in the process C. L-Asp **crystals** are recovered and the mother liq. contg. **ammonium** fumarate is recycled.

IT **14548-85-7P, Ammonium** fumarate
RL: BPR (Biological process); BYP (Byproduct); RCT (Reactant); BIOL (Biological study); PREP (Preparation); PROC (Process)
(manuf. of L-aspartic acid from butane and **ammonia** without purifn. of intermediates)
RN 14548-85-7 HCAPLUS
CN 2-Butenedioic acid (2E)-, diammonium salt (9CI) (CA INDEX NAME)

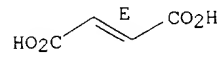
Double bond geometry as shown.



●2 NH3

IT **110-17-8P**, Fumaric acid, biological studies
RL: BPR (Biological process); IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
(manuf. of L-aspartic acid from butane and **ammonia** without purifn. of intermediates)
RN 110-17-8 HCAPLUS
CN 2-Butenedioic acid (2E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.

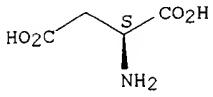


IT **7664-41-7, Ammonia**, biological studies
RL: BPR (Biological process); RCT (Reactant); BIOL (Biological study); PROC (Process)
(manuf. of L-aspartic acid from butane and **ammonia** without purifn. of intermediates)
RN 7664-41-7 HCAPLUS
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IT **56-84-8P**, L-Aspartic acid, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(manuf. of L-aspartic acid from butane and **ammonia** without purifying intermediates)
RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



IT **9027-30-9**, Aspartase
RL: CAT (Catalyst use); USES (Uses)
(manuf. of L-aspartic acid from butane and **ammonia** without purifying intermediates)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

=> d bib abs hitstr 132 5

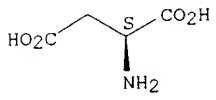
L32 ANSWER 5 OF 8 HCAPLUS COPYRIGHT 2000 ACS
AN 1997:801983 HCAPLUS
DN 128:74403
TI Continuous manufacture of aspartic acid from fumaric acid and **ammonia** with aspartase
IN Miura, Miyuki; Kato, Naoki; Mori, Yoshiaki; Watanabe, Naoyuki
PA Mitsubishi Chemical Industries Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09322790	A2	19971216	JP 1996-144189	19960606

AB In manuf. of aspartic acid (I) by (1) reaction of fumaric acid (II) with NH3 using aspartase or aspartase-producing microorganisms to form **ammonium** aspartate (III), (2) **crystn.** of I from the reaction solns. by adding II, and (3) isolating the **cryst.** I and recycling the mother liquors, II is supplied at (2) and at .gtoreq.1 process of (1) and (3). Concn. of aq. II in (1) is 10-30 wt.%, while amt. of II added at (2) is adjusted to 0.1-0.85 mol. ratio to III. I is continuously given by the process with high purity, yield, and **cryst.** recovery.

IT **56-84-8P**, Aspartic acid, preparation
RL: BMF (Bioindustrial manufacture); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(continuous manuf. of aspartic acid from fumaric acid and NH3 with aspartase)
RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

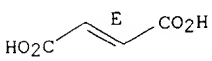
Absolute stereochemistry. Rotation (+).



IT **9027-30-9**, Aspartase
RL: CAT (Catalyst use); USES (Uses)
(continuous manuf. of aspartic acid from fumaric acid and NH3 with aspartase)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **110-17-8**, Fumaric acid, reactions **7664-41-7**, **Ammonia**, reactions
RL: RCT (Reactant)
(continuous manuf. of aspartic acid from fumaric acid and NH3 with aspartase)
RN 110-17-8 HCAPLUS
CN 2-Butenedioic acid (2E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



RN 7664-41-7 HCAPLUS
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

=> d bib abs hitstr 132 6

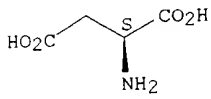
L32 ANSWER 6 OF 8 HCAPLUS COPYRIGHT 2000 ACS
AN 1996:241816 HCAPLUS
DN 124:315167
TI Manufacture of L-aspartic acid with aspartase-containing substances
IN Hayashi, Takaya; Mukoyama, Masaharu; Sakano, Koichi
PA Nippon Catalytic Chem Ind, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08033493	A2	19960206	JP 1995-121648	19950519
PRAI	JP 1994-106928		19940520		

AB Asp is manufd. by treatment of substrate media contg. fumaric acid (I) and NH3 and/or **ammonium** fumarate with substances contg. enzymes having aspartase activity at I concn. 15-25 wt.%, pptn. of Asp by addn. of 0.85-1.2 times (by mol) as much I as Asp in the reaction media, collection of Asp by filtration and washing the pptd. Asp **crystals** at .gtoreq.40.degree., and then addn. of NH3 to the mother liquors and washings for reuse as the substrate media. Escherichia coli was aerobically cultured in a medium contg. I, yeast ext., corn steep liquor, salts, and NH3 at 37.degree. and the cells collected were treated with a substrate medium contg. 100 g I and NH3 at 37.degree. for 5 h to give a reaction medium 99.0 mol% (to I) **ammonium** L-aspartate, **crystn**. of which with addn. of 110 g I followed by filtration and washing the **crystals** with H2O at 50.degree. gave 105 g Asp **crystals** (purity 96.2 wt.%).

IT **56-84-8P**, L-Aspartic acid, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(manuf. of chiral aspartic acid **crystals** from fumaric acid and NH3 or **ammonium** fumarate with aspartase-contg. substances)
RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

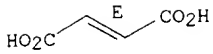
Absolute stereochemistry. Rotation (+).



IT **9027-30-9**, Aspartase
RL: CAT (Catalyst use); USES (Uses)
(manuf. of chiral aspartic acid **crystals** from fumaric acid and NH3 or **ammonium** fumarate with aspartase-contg. substances)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **110-17-8**, Fumaric acid, reactions **7664-41-7**, **Ammonia**, reactions **14548-85-7**, **Ammonium** fumarate
RL: RCT (Reactant)
(manuf. of chiral aspartic acid **crystals** from fumaric acid and NH3 or **ammonium** fumarate with aspartase-contg. substances)
RN 110-17-8 HCAPLUS
CN 2-Butenedioic acid (2E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.

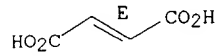


RN 7664-41-7 HCAPLUS
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

RN 14548-85-7 HCAPLUS
CN 2-Butenedioic acid (2E)-, diammonium salt (9CI) (CA INDEX NAME)

Double bond geometry as shown.



●2 NH_3

=> d bib abs hitstr l32 7

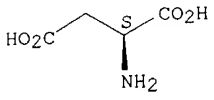
L32 ANSWER 7 OF 8 HCAPLUS COPYRIGHT 2000 ACS
AN 1996:241815 HCAPLUS
DN 124:315166
TI Manufacture of L-aspartic acid with aspartase-containing substances and the **crystalline** L-aspartic acid product
IN Hayashi, Takaya; Mukoyama, Masaharu; Sakano, Koichi
PA Nippon Catalytic Chem Ind, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08033492	A2	19960206	JP 1995-121505	19950519
PRAI	JP 1994-106928		19940520		

AB Asp is manufd. by treatment of substrate media contg. fumaric acid (I) and NH3 and/or **ammonium** fumarate with substances contg. enzymes having aspartase activity at I concn. .ltoreq.13 wt.%, pptn. of Asp by addn. of 0.85-1.2 times (by mol) as much I as Asp in the reaction media, collection of Asp by filtration and washing the pptd. Asp **crystals** with H2O , and then addn. of NH3 to the mother liquors and washings for reuse as the substrate media. Escherichia coli was aerobically cultured in a medium contg. I, yeast ext., corn steep liquor, salts, and NH3 at 37.degree. and the cells collected were treated with a substrate medium contg. 100 g I and NH3 at 37.degree. for 5 h to give a reaction medium contg. 99.0 mol% (to I) **ammonium** L-aspartate, **crystn.** of which with addn. of 100 g I gave 111.8 g Asp **crystals** (purity 96.5 wt.%).

IT **56-84-8P**, L-Aspartic acid, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(manuf. of chiral aspartic acid from fumaric acid and NH3 or **ammonium** fumarate with aspartase-contg. substances)
RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

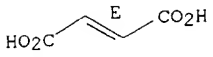
Absolute stereochemistry. Rotation (+).



IT **9027-30-9**, Aspartase
RL: CAT (Catalyst use); USES (Uses)
(manuf. of chiral aspartic acid from fumaric acid and NH3 or **ammonium** fumarate with aspartase-contg. substances)
RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **110-17-8**, Fumaric acid, reactions **7664-41-7**, **Ammonia**, reactions **14548-85-7**, **Ammonium** fumarate
RL: RCT (Reactant)
(manuf. of chiral aspartic acid from fumaric acid and NH3 or **ammonium** fumarate with aspartase-contg. substances)
RN 110-17-8 HCAPLUS
CN 2-Butenedioic acid (2E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.

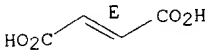


RN 7664-41-7 HCAPLUS
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

RN 14548-85-7 HCAPLUS
CN 2-Butenedioic acid (2E)-, diammonium salt (9CI) (CA INDEX NAME)

Double bond geometry as shown.



●2 NH_3

=> d bib abs hitstr 132 8

L32 ANSWER 8 OF 8 HCAPLUS COPYRIGHT 2000 ACS
AN 1996:115452 HCAPLUS
DN 124:173606
TI Biochemical manufacture of L-aspartic acid from fumaric acid and **ammonia**
IN Hayashi, Takaya; Mukoyama, Masaharu; Sakano, Koichi
PA Nippon Catalytic Chem Ind, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

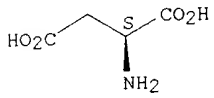
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07308195	A2	19951128	JP 1994-102789	19940517
	JP 2798886	B2	19980917		

AB L-Aspartic acid (I) is manufd. by treating substrate media contg. fumaric acid, **ammonia**, and alkali metal ions with aspartase activity-having substances, mixing the reaction mixts. with mineral acids, collecting **cryst**. I by filtration, and discharging waste fluids mainly contg. mineral acid alkali metal salts. An aq. soln. contg. 200 g fumaric acid, MgSO4, NaOH, and **ammonia** was treated with Escherichia coli ATCC 11303 cells at 37.degree. for 5 h, mixed with H2SO4, heated to 60.degree., and cooled to give 216.4 g **cryst**. I.

IT **56-84-8P**, Aspartic acid, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(biochem. manuf. of aspartic acid from fumaric acid and **ammonia**)

RN 56-84-8 HCAPLUS
CN L-Aspartic acid (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



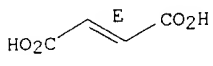
IT **9027-30-9**, Aspartase
RL: CAT (Catalyst use); USES (Uses)
(biochem. manuf. of aspartic acid from fumaric acid and **ammonia**)

RN 9027-30-9 HCAPLUS
CN Ammonia-lyase, aspartate (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **110-17-8**, Fumaric acid, reactions **7664-41-7**, **Ammonia**, reactions
RL: RCT (Reactant)
(biochem. manuf. of aspartic acid from fumaric acid and **ammonia**)

RN 110-17-8 HCAPLUS
CN 2-Butenedioic acid (2E)- (9CI) (CA INDEX NAME)

Double bond geometry as shown.



RN 7664-41-7 HCAPLUS
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3